OM-217 741B
March 2005

Performance Series™ Helmets
Models: XLi, XLix and Elite™

XLi

XLix

Elite

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SECTION 1 – SAFETY PRECAUTIONS – READ BEFORE USING

Warning! Watch Out! There are possible hazards as shown in the adjoining symbols.

- Read and follow Section 1 for all safety symbols.

ARC RAYS can burn eyes and skin.

Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.

- Wear a welding helmet fitted with a proper shade of filter to protect your face and eyes when welding or watching (see ANSI Z49.1 and Z87.1 listed in Safety Standards). Refer to Shade and Sensitivity charts in Section 2.
- Wear approved safety glasses with side shields under your helmet.
- Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather and wool) and foot protection.

WELDING HELMETS do not provide unlimited eye, ear and face protection.

- Use impact resistant safety spectacles or goggles and ear protection at all times when using this welding helmet.
- Do not use this helmet while performing grinding operations, working with or around explosives or corrosive liquids.
- Do not weld in the overhead position while using this helmet.
- Inspect the auto-lens frequently. Immediately replace any scratched, cracked, or pitted cover lenses or auto-lenses.

NOISE can damage hearing.

Noise from some processes or equipment can damage hearing.

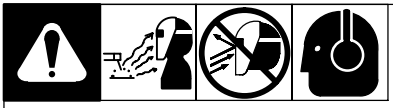
- Wear approved ear protection if noise level is high.

SECTION 2 – SPECIFICATIONS

Viewing Field (XLi, Xlix)	97mm x 47mm/3.81” x 1.85”
Viewing Field (Elite)	97mm x 60mm/3.81” x 2.62”
Reaction Time (XLi)	0.0000555sec (1/18,000)
Reaction Time (Xlix, Elite)	0.0000500sec (1/20,000)
Available Shades	Darkened State: No. 9 – No. 13 / Light State: No. 4 provides continuous UV and IR protection
Sensitivity Control light levels	Adjusts for varying ambient light and welding arc
Delay Control	Slows lens dark-to-light state between 0.1 and 1.0 seconds
Automatic Power Off	Shuts lens Off 15–20 minutes after last arc is struck
Low Battery Indicator	Red LED light illuminates to indicate 2–3 days remaining battery life
Power Supply	CR2450 Lithium Batteries (Miller Part No. 217 043)
Sensors	Independent/Redundant (Two–XLi, Xlix) (Four–Elite)
Operating Temperature*	14°F to 131°F / –10C to +55°C ☞ *When stored in extremely cold temperatures, warm helmet to ambient temperature before welding.*
Storage Temperature	–4°F to 158°F / –20°C to +70°C ☞ *When stored in extremely cold temperatures, warm helmet to ambient temperature before welding.*
Total Weight	XLi & Xlix: 453.6g (16oz.) / Elite: 510.3g (1lb 2oz.)
Standards	ANSI Z87.1/DIN/CE/TUV (CSA: Xlix, Elite)
Warranty	18 Months from date of purchase (see Section 9)

☞ *The helmets in this manual are covered by one or more of the following patents:*
U.S. Patent – No. 6,552,316, No. 6,483,090, No. 6,614,409
DE. Patent – No. 199 59 944 C2, No. 199 59 945 C2
FR. Patent – No. 9916004

SECTION 3 – OPERATION INSTRUCTIONS



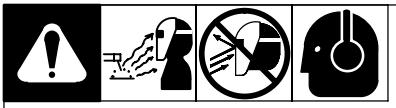
On/Auto-Off Button

Locate the ON button and press ON to weld, the lens will automatically darken twice and then return to the light state, the helmet is then ready to weld.
Note: The lens will Auto-Off (clear state – No. 4) after 15–20 minutes after the last arc. It will be necessary to press the ON button to resume welding.

Variable Shade Control (No. 9 – No. 13)

Use the shade chart below to select proper shade control setting based on your welding process. We recommend starting at shades 12 or 13 and adjust lighter based on the welding application and personal preference.

Application Welding	Arc Current in Amperes	Protective Shade No.
Stick Electrodes	Less than 40 40–80 80–175 175–300 300–500	9 10 11 12 13
MIG	Less than 100 100–175 175–300 300–500	10 11 12 13
Gas Tungsten Arc Welding (TIG)	Less than 50 50–100 100–200 200–400	10 11 12 13
Air Carbon	Less than 500 500–700	12 13
Plasma Arc Cutting	60–150 150–250 250–400	11 12 13
Plasma Arc Welding	Less than 50 50–200 200–400	9 10 12



Sensitivity Control

The sensitivity control is used to make the lens more responsive to differing light levels experienced in various welding processes. **We recommend a Mid-Range or 30–50% sensitivity setting for most applications.** See Adjusting Sensitivity and Recommended Sensitivity Settings sections following.

Adjusting Sensitivity

It may be necessary to adjust helmet sensitivity to accommodate different lighting conditions or if lens is flashing On and Off. Adjust helmet sensitivity as follows:

☞ *Adjust helmet sensitivity in lighting conditions helmet will be used in.*

1. Turn sensitivity control to lowest setting.
2. Press On/Off Button to turn helmet On. Helmet lens will darken twice and then clear.
3. Face the helmet in the direction of use, exposing it to the surrounding light conditions.
4. Gradually turn sensitivity setting clockwise until the lens darkens, then turn sensitivity control counterclockwise until slightly past setting where lens clears. Helmet is ready for use. Slight readjustment may be necessary for certain applications or if lens is flashing on and off.

Recommended Sensitivity Settings	
Stick Electrode	Mid-Range
Short Circuiting (MIG)	Low/Mid-Range
Pulsed & Spray (MIG)	Mid-Range
Gas Tungsten Arc (TIG)	Mid/High-Range
Plasma Arc Cutting/Welding	Low/Mid-Range

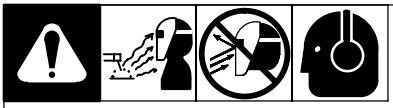
Lens Delay Control

The lens delay control is used to slow the lens-switching time to the clear state after welding. The delay is particularly useful in eliminating bright after-rays present in higher amperage applications where the molten puddle remains bright momentarily after welding. Adjusts from (.10 second–Min. to 1.0 second–Max).

Low Battery Indicator

The low battery indicator lights when 2–3 days of battery life remain.

Replace the battery with a readily available coin type CR2450 Lithium Battery or equivalent. (Miller Part No. 217043) (see Section 4).



Adjusting Headgear for Maximum Comfort

There are four headgear adjustments: headgear top, tightness, angle adjustment, and distance adjustment.

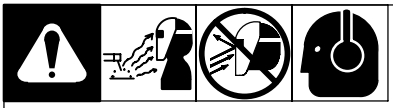
XLi –

1. Headgear Top – Adjusts headgear for proper depth on the head to ensure correct balance and stability.
2. Headgear tightness – To adjust, push in the adjusting knob located on the back of the headgear and turn left or right to desired tightness. ***Note:*** if adjustment is limited, it may be necessary to remove the comfort cushion.
3. Angle adjustment – Three slots on the right side of the helmet position the forward tilt of the helmet. To adjust, loosen the right outside tension adjustment knob then lift up on the inside tab and slide to the desired hole. Retighten tension adjustment knob.
4. Distance adjustment – Adjusts the distance between the face and the lens. To adjust, loosen both outside tension knobs and slide forward or back to desired position and retighten. (Both sides must be equally positioned for proper vision.)

Xlix and Elite –

1. Headgear Top – Adjusts headgear for proper depth on the head to ensure correct balance and stability.
2. Headgear tightness – To adjust, push in the adjusting knob located on the back of the headgear and turn left or right to desired tightness. ***Note:*** if adjustment is limited, it may be necessary to remove the comfort cushion.
3. Distance adjustment – Adjusts the distance between the face and the lens. To adjust, loosen both outside tension knobs and press inward to free from adjustment slots. Move forward or back to desired position and retighten. (Both sides must be equally positioned for proper vision.)
4. Angle adjustment – Five pins on the right side of the headband top provide adjustment for the forward tilt of the helmet. To adjust, loosen the right outside tension adjustment knob then lift on the control arm tab and move it to the desired position. Retighten tension adjustment knob.

☞ *When using either the front or back distance adjustment positions, only the center three angle adjustment pins can be used.*



Replacement of the Front and Inside Lens Covers

▲ **Warning! Never use the auto-darkening lens without the inside and outside lens covers properly installed. Welding spatter will damage the auto-darkening lens and void the warranty.**

XLi –

1. Outside – Remove the outside lens cover frame by grasping an outside corner and pulling gently away from the helmet. Remove the clear lens cover by pulling the retaining tabs away from the lens. Install the lens cover replacement by reversing this procedure. (Make certain that the lens cover frame is secure). We recommend replacing the frame after five lens cover replacements — see the economical front lens holder kits.
2. Inside – Remove the inside lens cover by prying the lens up at the thumbnail opening located at the top center of the lens cover. Replace the lens by gently bowing it in the center and inserting it, one end at a time into the retaining clips located on the outside of the auto-darkening lens assembly.

☞ *Be sure the cover lens is seated properly (flat) to prevent fogging.*

Xlix –

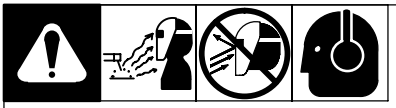
1. Outside – Remove the outside lens cover frame by grasping the frame and pulling directly up toward the helmet top. Remove the clear lens cover by pulling the retaining tabs away from the lens cover. Install the lens cover replacement by reversing this procedure.
2. Inside – Remove the inside lens cover by prying the lens up at the thumbnail opening located at the top center of the lens cover. Replace the lens by gently bowing it in the center and inserting it, one end at a time, into the retaining clips on the outside of the auto-darkening lens assembly.

☞ *Be sure the cover lens is seated properly (flat) to prevent fogging.*

Elite –

1. Outside/Inside – To remove either lens cover, first remove the auto-darkening lens assembly. To remove the lens assembly, push down on the bottom retaining arms and push the retaining clips toward the outside of the helmet. Then, just lift up on the assembly and pull free of the helmet. Next, remove the outside lens cover by pushing into the helmet. Remove the rubber lens gasket and install on the new lens cover. (When reinstalling the lens cover, make certain that smooth surface on the lens gasket faces forward in the helmet.) Reinstall the lens assembly by reversing the above procedure.
2. Inside – To replace the inside lens cover, remove the auto-darkening lens assembly from the lens frame by pushing up on the top two retaining tabs while gently pushing the lens free. Remove the lens cover by sliding it out of either side. Replace with the new cover lens and reinstall the assembly in the helmet by reversing the above procedure.

SECTION 4 – BATTERY REPLACEMENT



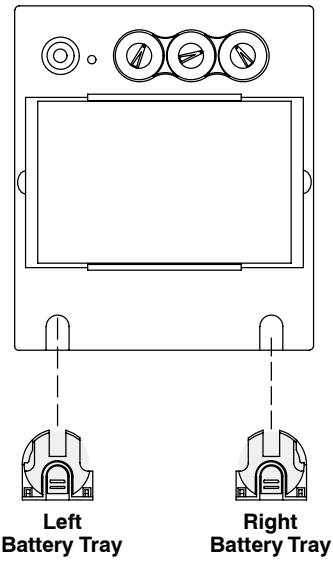
XLi and Xlix –

Remove the battery by inserting a coin into the slot on the battery cover and turn to the left to release the cover. Replace with a CR2450 lithium type battery or equivalent, Miller Part No. 217043. (***Note:*** make certain that the positive, (+) side of the battery faces up when reinstalling). To reinstall battery cap, position cap with arrows at 6 and 12 o'clock positions then turn cap 1/4 turn clockwise.

Elite –

To replace the batteries on the Elite remove the auto-darkening lens assembly. Please refer to the procedure found in the lens cover replacement section. After removing the lens assembly, locate the two battery compartments located on the bottom. Slide the battery holding trays out and remove the old batteries. Replace with CR2450 lithium type batteries or equivalent, Miller Part No. 217043. (***Note:*** make certain that the positive, (+) side of the battery faces up). Reinstall the battery trays. To test, press the ON button. The lens should flash dark twice. Reinstall the lens assembly.

☞ *Left and right battery trays are not interchangeable. The auto–darkening helmet will not work if battery trays are installed on the wrong sides.*



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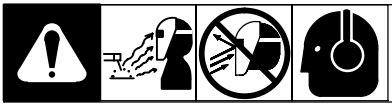
SECTION 5 – MAINTENANCE

Cleaning

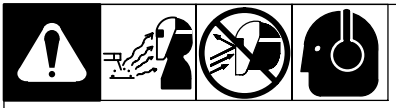
The helmet requires little maintenance. However, for best performance we recommend cleaning after use. Using a soft cloth dampened with a mild soap and water solution, wipe the cover lenses clean. Allow to air dry. Occasionally, the filter lens and sensors should be cleaned by gently wiping with a soft, dry cloth. **(Never use solvents or abrasive cleaning detergents. Do not immerse the lens assembly in water).**

SECTION 6 – TROUBLESHOOTING



Symptom	Solution
Not ON – auto-lens will not darken momentarily when turned on.	Check batteries and verify they are in good condition and installed properly. Also, check battery surfaces and contacts and clean if necessary. Check battery for proper contact and gently adjust contact points if necessary. This is particularly important if the helmet has been dropped. **Elite helmets only:** verify left and right battery trays are installed on the correct sides.
Not switching – auto-lens stays light and will not darken when welding.	Stop welding immediately: Make sure the auto-lens power is turned ON. If power is on, review the sensitivity recommendations and adjust sensitivity. Clean lens cover and sensors of any obstructions. Make sure the sensors are facing the arc; angles of 45° or more may not allow the arc light to reach the sensors.
Not Switching – auto-lens stays dark after the weld arc is extinguished, or the auto-lens stays dark when no arc is present.	Fine-tune the sensitivity setting by making small adjustments to the control by turning it toward the “min” setting. In extreme light conditions, it may be necessary to reduce the surrounding light levels.
Sections of the auto-lens are not going dark, distinct lines separate the light and dark areas.	Stop welding immediately: The auto-lens may be cracked which can be caused by the impact of dropping the helmet. Weld spatter on the auto lens may also cause cracking. (The lens may need to be replaced; most cracked lenses are not covered by warranty).
Switching or Flickering – the auto-lens darkens then lightens while the welding arc is present.	Review the sensitivity setting recommendations and increase the sensitivity if possible. Be sure the arc sensors are not being blocked from direct access to the arc light. Check the lens cover for dirt and spatter that may be blocking the arc sensors.
Inconsistent or lighter auto-lens shading in the dark-state, noticeable on the outside edges and corners.	Referred to as an angle of view effect, auto-darkening lenses have an optimum viewing angle. The optimum viewing angle is perpendicular or 90° to the surface of the auto-lens. When that angle of view varies in the dark-state, welders may notice slightly lighter areas at the outside edges and the corners of the lens. This is normal and does not represent any health or safety hazard. This effect may also be more noticeable in applications where magnifying lenses are used.

SECTION 7 – INSTALLING OPTIONAL MAGNIFYING LENS



☞ *To prevent lens fogging, install flat side of magnifying lens toward auto-darkening lens.*

XLi –

Magnifying lenses can be adapted to the XLi helmet as follows:

1. Pull outside lens cover/holder free from helmet.
2. Position magnifying lens over auto-darkening lens between the four centering tabs.
3. Reinstall outside lens cover/holder over top of magnifying lens.
4. Reverse procedure to remove magnifying lens.

Xlix –

Installation:

1. Locate magnifying lens holding tabs on lens assembly on inside of helmet.
2. Place left side of the magnifying lens under the left side holding tabs.
3. Gently push down on right side of magnifying lens. Both sides of lens should snap in place.

Removal:

1. Remove helmet external shade control knob by prying off with a screwdriver or pulling off with a pliers.
2. Remove the shade control retaining nut and allow the control to fall free inside the helmet.
3. Remove front lens cover frame by sliding it up toward top of helmet.
4. Place one hand inside helmet and apply slight pressure to top of lens assembly. With other hand, push down on the two top retaining tabs on the front of the helmet. Catch lens assembly as it is released from helmet.
5. Slide magnifying lens up and away from the lens holding tabs.

Elite –

1. Remove lens holder (with auto-darkening lens) from helmet shell.
2. Remove auto-darkening lens from lens holder.
3. Position lens holder with magnifying lens holding tabs facing toward you. From the bottom up, slide magnifying lens into position. (Slide magnifying lens up or down slightly as desired.)
4. Reinstall the auto-darkening lens in the lens holder.
5. Reverse procedure to remove magnifying lens.

SECTION 8 – REPLACEMENT PARTS

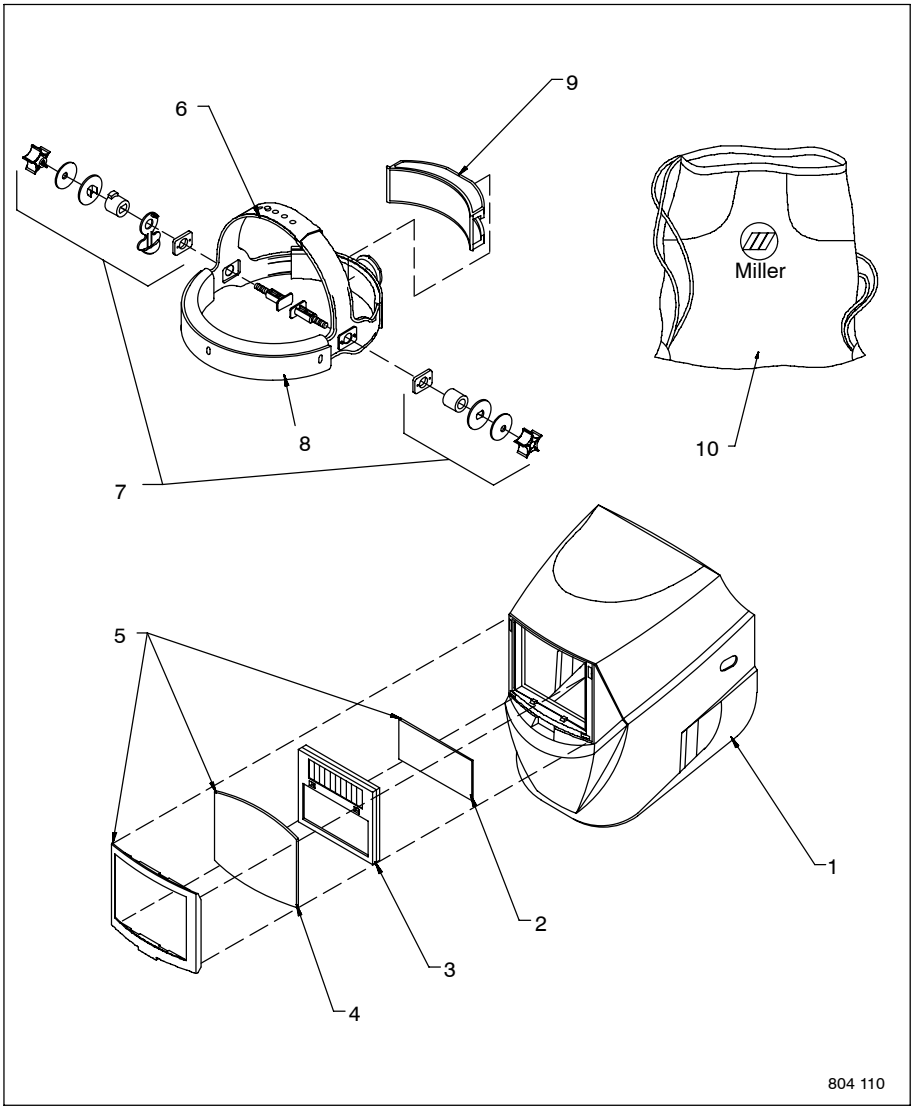
XLi Series

Item No.	Description	XLi Series
1	Helmet shell, Black	217 606
1	Helmet shell, American Eagle II	223 645
1	Helmet shell, Black Flame	217 604
1	Helmet shell, Red Flame	217 603
1	Helmet shell, Millermatic®	770 233
1	Helmet shell, Dale Earnhardt Sr.	770 253
1	Helmet shell, Dale Earnhardt Jr.	770 234
1	Helmet shell, Jeff Gordon	212 243
1	Helmet shell, Maple Leaf	
1	Helmet shell, OCC Paul Jr.	
1	Helmet shell, Stars and Stripes	
1	Helmet, shell, Boyd Coddington	
1	Helmet shell, Inferno	
2	Inside lens cover (4-1/2 x 2) (5 per Pkg.)	770 237
2	Inside lens cover (4-1/4 x 2-1/2) (5 per Pkg.)	
3	Auto-darkening lens assembly	216 822
	Gasket, front lens	
4	Front lens cover (4-1/2 x 2) (5 per Pkg.)	
4	Front lens cover (4-1/2 x 3-3/8) (5 per Pkg.)	770 240
4	Front lens cover (4-5/8 x 3-3/4) (5 per Pkg.)	
4	Front lens cover (4-11/16 x 5-5/8) (5 per Pkg.)	
5 *	Front lens holder kit, Black	770 156
5 *	Front lens holder kit, Gray	770 242
5 *	Front lens holder kit, Red	770 243
5 *	Front lens holder kit, Orange	212 244
5 *	Front lens holder kit, Blue	223 460
5*	Front lens holder kit, Maple Leaf Red	
5*	Front lens holder kit, OCC Gray	
	Frame, lens	
6	Ratchet headgear assembly (includes items 9 and 10)	770 120
7	Adjustment angle/stop hardware kit	770 247
8	Fabric headband	770 249
9	Comfort cushion, foam rubber	216 336
	Knob with hardware	
	Battery tray kit (left/right)	
	Battery, lithium (CR2450) (not shown)	217 043
	Battery cover (not shown)	217 044
	Hard hat adapters (not shown)	213 110
10	Helmet bag – Miller (not shown)	770 250
	Lense, 0.75 magnification (not shown)	212 235

	Lense, 1.00 magnification (not shown)	212 236
	Lense, 1.25 magnification (not shown)	212 237
	Lense, 1.50 magnification (not shown)	212 238
	Lense, 1.75 magnification (not shown)	212 239
	Lense, 2.00 magnification (not shown)	212 240
	Lense, 2.25 magnification (not shown)	212 241
	Lense, 2.50 magnification (not shown)	212 242

* Kit includes front lens holder and 5 Front lens covers.

XLi Series



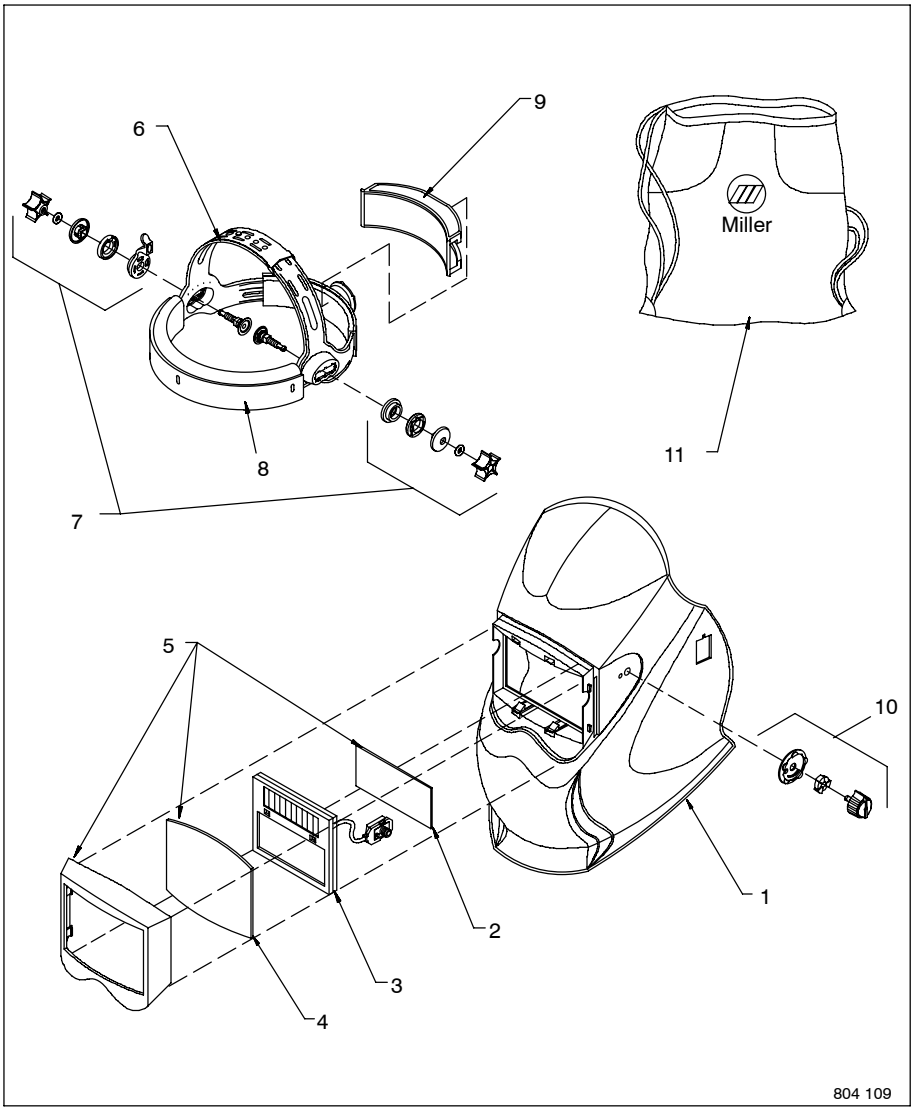
XLix Series

Item No.	Description	XLix Series
1	Helmet shell, Black	770 236
1	Helmet shell, American Eagle II	
1	Helmet shell, Black Flame	
1	Helmet shell, Red Flame	
1	Helmet shell, Millermatic®	
1	Helmet shell, Dale Earnhardt Sr.	
1	Helmet shell, Dale Earnhardt Jr.	
1	Helmet shell, Jeff Gordon	
1	Helmet shell, Maple Leaf	223 458
1	Helmet shell, OCC Paul Jr.	223 459
1	Helmet shell, Stars and Stripes	770 235
1	Helmet, shell, Boyd Coddington	
1	Helmet shell, Inferno	
2	Inside lens cover (4-1/2 x 2) (5 per Pkg.)	770 237
2	Inside lens cover (4-1/4 x 2-1/2) (5 per Pkg.)	
3	Auto-darkening lens assembly	216 823
	Gasket, front lens	
4	Front lens cover (4-1/2 x 2) (5 per Pkg.)	
4	Front lens cover (4-1/2 x 3-3/8) (5 per Pkg.)	
4	Front lens cover (4-5/8 x 3-3/4) (5 per Pkg.)	770 241
4	Front lens cover (4-11/16 x 5-5/8) (5 per Pkg.)	
5 *	Front lens holder kit, Black	770 245
5 *	Front lens holder kit, Gray	
5 *	Front lens holder kit, Red	
5 *	Front lens holder kit, Orange	
5*	Front lens holder kit, Blue	770 244
5*	Front lens holder kit, Maple Leaf Red	223 461
5*	Front lens holder kit, OCC Gray	223 462
	Frame, lens	
6	Ratchet headgear assembly (includes items 9 and 10)	770 246
7	Adjustment angle/stop hardware kit	770 248**
8	Fabric headband	770 249
	Replacement O-rings for kit 770 248 (5 per Pkg.)	079 975
9	Comfort cushion, foam rubber	216 336
10	Knob with hardware	212 454
	Battery tray kit (left/right)	
	Battery, lithium (CR2450) (not shown)	217 043
	Battery cover (not shown)	217 044
	Hard hat adapters (not shown)	222 003
11	Helmet bag – Miller (not shown)	770 250

	Lense, 0.75 magnification (not shown)	212 235
	Lense, 1.00 magnification (not shown)	212 236
	Lense, 1.25 magnification (not shown)	212 237
	Lense, 1.50 magnification (not shown)	212 238
	Lense, 1.75 magnification (not shown)	212 239
	Lense, 2.00 magnification (not shown)	212 240
	Lense, 2.25 magnification (not shown)	212 241
	Lense, 2.50 magnification (not shown)	212 242

* Kit includes front lens holder and 5 Front lens covers. ** Adjustment hardware kit with O-rings.

XLix Series



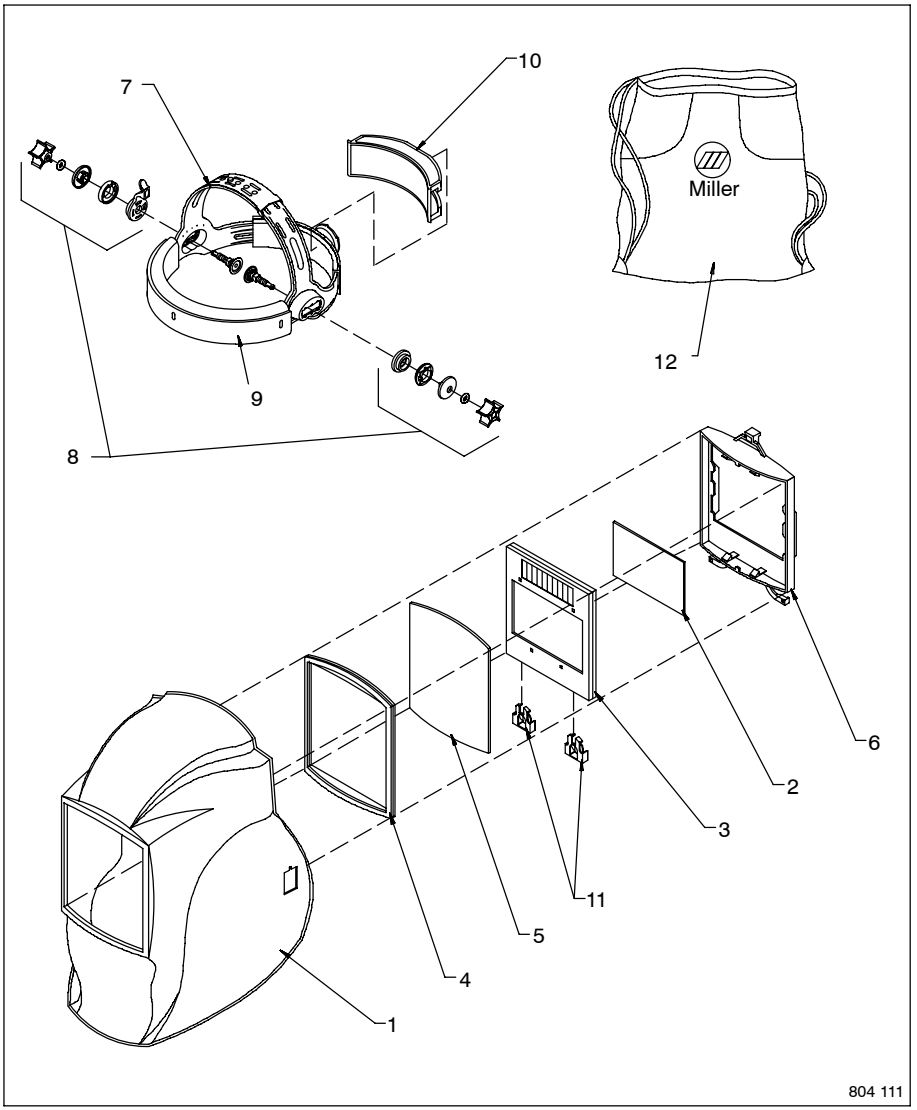
Elite Series

Item No.	Description	Elite Series
1	Helmet shell, Black	216 331
1	Helmet shell, American Eagle II	
1	Helmet shell, Black Flame	217 602
1	Helmet shell, Red Flame	216 332
1	Helmet shell, Millermatic®	
1	Helmet shell, Dale Earnhardt Sr.	
1	Helmet shell, Dale Earnhardt Jr.	
1	Helmet shell, Jeff Gordon	
1	Helmet shell, Maple Leaf	223 455
1	Helmet shell, OCC Paul Jr.	223 456
1	Helmet shell, Stars and Stripes	216 329
1	Helmet, shell, Boyd Coddington	223 457
1	Helmet shell, Inferno	223 454
2	Inside lens cover (4-1/2 x 2) (5 per Pkg.)	
2	Inside lens cover (4-1/4 x 2-1/2) (5 per Pkg.)	216 327
3	Auto-darkening lens assembly	216 328
4	Gasket, front lens	216 337
5	Front lens cover (4-1/2 x 2) (5 per Pkg.)	
5	Front lens cover (4-1/2 x 3-3/8) (5 per Pkg.)	
5	Front lens cover (4-5/8 x 3-3/4) (5 per Pkg.)	
5	Front lens cover (4-11/16 x 5-5/8) (5 per Pkg.)	216 326
	Front lens holder kit, Black	
	Front lens holder kit, Gray	
	Front lens holder kit, Red	
	Front lens holder kit, Orange	
	Front lens holder kit, Blue	
	Front lens holder kit, Maple Leaf Red	
	Front lens holder kit, OCC Gray	
6	Frame, lens	216 335
7	Ratchet headgear assembly (includes items 9 and 10)	770 246
8	Adjustment angle/stop hardware kit	770 248**
9	Fabric headband	770 249
	Replacement O-rings for kit 770 248 (5 per Pkg.)	079 975
10	Comfort cushion, foam rubber	216 336
	Knob with hardware	
11	Battery tray kit (left/right)	216 339
	Battery, lithium (CR2450) (not shown)	217 043(2 req.)
	Battery cover (not shown)	
	Hard hat adapters (not shown)	222 003
12	Helmet bag – Miller (not shown)	770 250

	Lense, 0.75 magnification (not shown)	212 235
	Lense, 1.00 magnification (not shown)	212 236
	Lense, 1.25 magnification (not shown)	212 237
	Lense, 1.50 magnification (not shown)	212 238
	Lense, 1.75 magnification (not shown)	212 239
	Lense, 2.00 magnification (not shown)	212 240
	Lense, 2.25 magnification (not shown)	212 241
	Lense, 2.50 magnification (not shown)	212 242

** Adjustment hardware kit with O-rings.

Elite Series



SECTION 9 – LIMITED WARRANTY

Effective January 1, 2005

LIMITED WARRANTY – Subject to the terms and conditions below. Miller Electric Mfg. Co., Appleton, Wisconsin, warrants to its original retail purchaser that the new Miller equipment sold after the effective date of this limited warranty is free of defects in material and workmanship at the time it is shipped by Miller. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OR MERCHANTABILITY AND FITNESS.

Miller XLi, Xlix and Elite Series auto-darkening lens helmets are warranted for 18 months from the date of purchase. *Proof of purchase is required for warranty transactions so it is imperative that a copy of the original invoice or sales receipt be retained.*

For warranty transactions, contact your Miller Distributor.

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Miller Electric Mfg. Co.
An Illinois Tool Works Company
1635 W. Spencer Street
Appleton, WI 54914 USA

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